

Econ 3391 – Quiz 5

PRINT NAME: _____

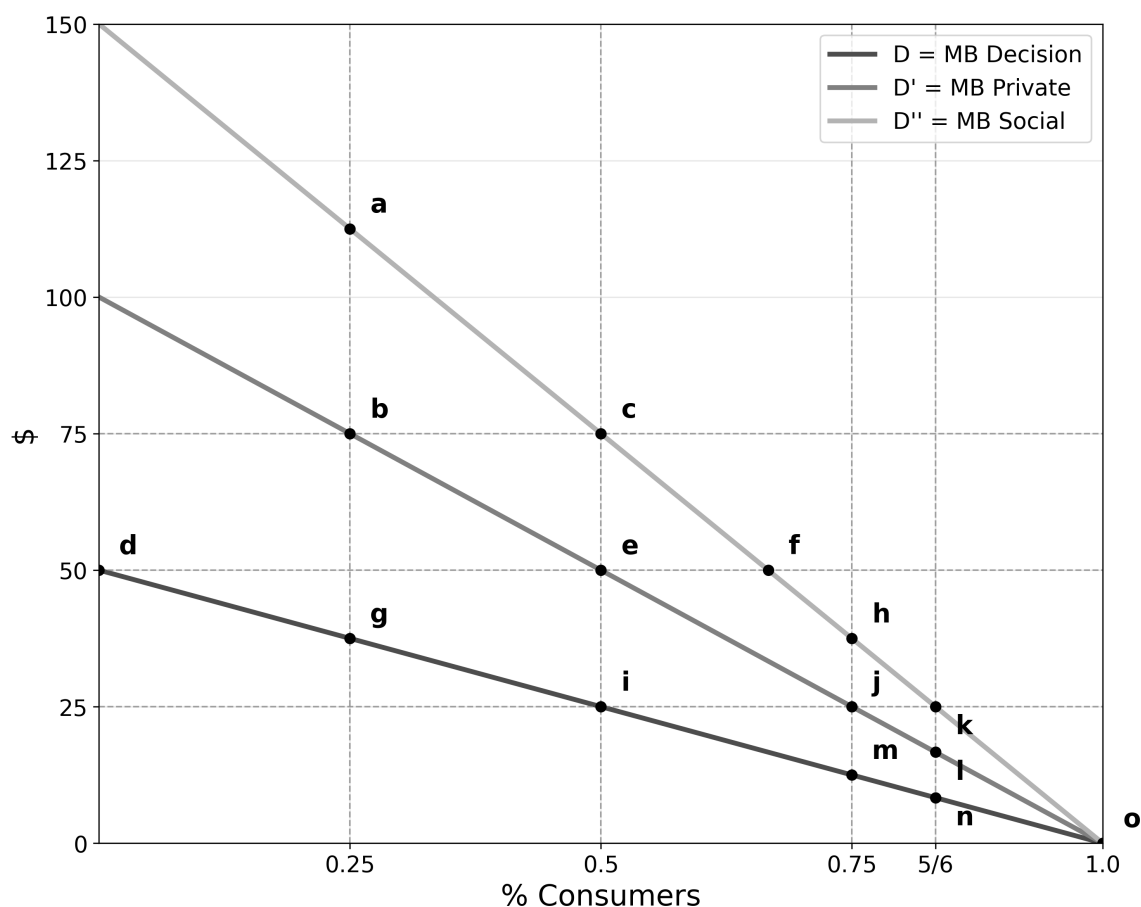
Energy Efficiency Gap

Smart thermostats save energy by automating heating and cooling in homes. In the figure below, D' (MB private) plots the true distribution of these savings in the population. This line shows the fraction of the population (x axis) with savings greater than or equal to each dollar amount on the y axis.

Smart thermostats also cost more money to purchase up front. A smart thermostat costs \$75, while a regular thermostat only costs \$50.

Consumers are less attentive to energy savings than to upfront costs. As a result, they value a dollar of energy savings from smart thermostats to be $\gamma < 1$. The curve D (MB Decision) plots consumers' *perceived* marginal benefits of smart thermostats.

Electricity also involves unpriced externalities. So the true social benefits of smart thermostats are even larger. Curve D'' (MB social) plots the true social marginal benefits of smart thermostats.



1. In the baseline, where consumers are inattentive, what fraction will purchase a smart thermostat?
2. In this baseline scenario, how much money does the *marginal* purchaser believe they save on energy bills from the smart thermostat?
3. How much will the marginal consumer actually save?
4. How much money would consumers have if they were fully attentive to energy savings? Provide the letters corresponding to the shape that represents losses from this private “internality” (ie shape “efg” or “lmnop”).
5. How much larger would social net benefits be if consumers were fully rational and attentive? Again, provide the letters corresponding to the shape that represents the social welfare gain.
6. The article, “For Government That Works, Call In the Auditors,” lead with a different example, unrelated to energy efficiency, where economists found that the government could not be relied on to evaluate its own environmental policy. What was the setting?
 - A. Measuring compliance with air quality regulations in India.
 - B. Measuring the oil savings from electric vehicle subsidies in California.
 - C. Measuring whether utilities were actually complying with renewable portfolio standards.
 - D. Measuring compliance with rules for disposing fracking wastewater in western Pennsylvania.